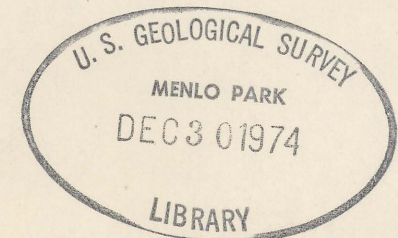
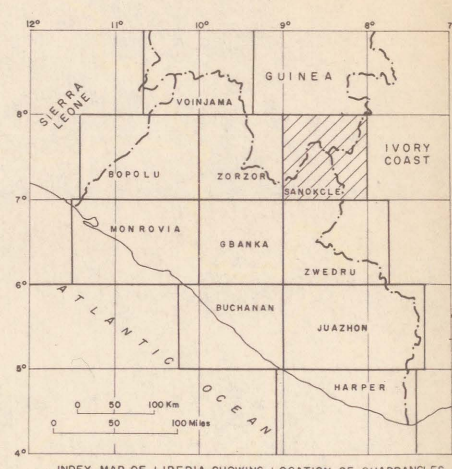
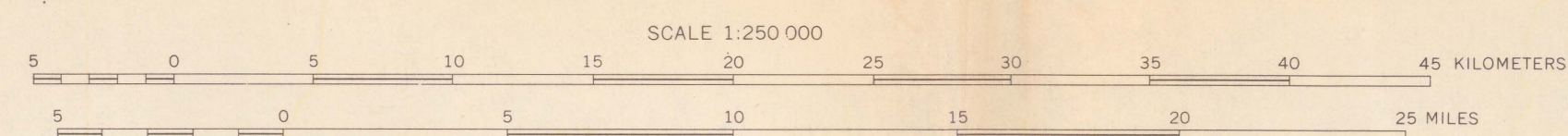


(200)
PROJECT REPORT: Liberian
investigations.
nw. 67-B



Compiled by photogrammetric methods from aerial photographs taken 1968-69.
The international boundary must not be considered authoritative.
Form lines have no consistent interval and show only the general shape of terrain.
Geographic grid and rectangular grid based on Hotine's Rectified Skew Orthomorphic projection.

PREPARED BY THE U.S. GEOLOGICAL SURVEY AND THE LIBERIAN
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GEOLOGIC MAP OF THE SANOKOLE QUADRANGLE, LIBERIA

by
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U. S. Geological Survey
OPEN FILE REPORT 74-304
This report is preliminary and has
not been edited or reviewed for
conformity with Geological Survey
standards or nomenclature.

EXPLANATION

Correlation of Map Units

Of ₁	Of ₂	Holocene	Quaternary
T ₁	T _c	Tertiary	
di	md	so	sg
q	q ₁	q ₂	q ₃
g ₁	g ₂	g ₃	g ₄
g ₅	g ₆	g ₇	g ₈
g ₉	g ₁₀	g ₁₁	g ₁₂
g ₁₃	g ₁₄	g ₁₅	g ₁₆
g ₁₇	g ₁₈	g ₁₉	g ₂₀
g ₂₁	g ₂₂	g ₂₃	g ₂₄
g ₂₅	g ₂₆	g ₂₇	g ₂₈
g ₂₉	g ₃₀	g ₃₁	g ₃₂
g ₃₃	g ₃₄	g ₃₅	g ₃₆
g ₃₇	g ₃₈	g ₃₉	g ₄₀
g ₄₁	g ₄₂	g ₄₃	g ₄₄
g ₄₅	g ₄₆	g ₄₇	g ₄₈
g ₄₉	g ₅₀	g ₅₁	g ₅₂
g ₅₃	g ₅₄	g ₅₅	g ₅₆
g ₅₇	g ₅₈	g ₅₉	g ₆₀
g ₆₁	g ₆₂	g ₆₃	g ₆₄
g ₆₅	g ₆₆	g ₆₇	g ₆₈
g ₆₉	g ₇₀	g ₇₁	g ₇₂
g ₇₃	g ₇₄	g ₇₅	g ₇₆
g ₇₇	g ₇₈	g ₇₉	g ₈₀
g ₈₁	g ₈₂	g ₈₃	g ₈₄
g ₈₅	g ₈₆	g ₈₇	g ₈₈
g ₈₉	g ₉₀	g ₉₁	g ₉₂
g ₉₃	g ₉₄	g ₉₅	g ₉₆
g ₉₇	g ₉₈	g ₉₉	g ₁₀₀

Stratigraphic succession not implied for the following units

Plutonic igneous rocks

Metamorphic rocks

Precambrian

DESCRIPTION OF MAP UNITS

Of₁ Fluvial and deltaic deposits--River gravels related to present drainage patterns.

Of₂ Fluvial and deltaic deposits--River gravels related to old drainage patterns.

T₁ Laterite-ferruginous laterite caprock forming high surfaces of low relief.

T_c Ganga-Conglomeratic deposits containing clasts of iron-formation, cemented by iron oxides. Form a high surface of relict depositional relief in the Grasfields area.

di Diorite--Massive hornblende diorite.

md Metadiabase--Garnet- and amphibole-bearing diabase dikes.

i Iron-formation--Amphibole-bearing iron silicate, magnetite, ilmenite, and garnet quartzite in southeast corner of quadrangle.

i₁ Iron-formation--In the Nimba Range, Mt. Bele, and Mt. Bekeh, mostly magnetite-hematite ilmenite with minor silicate and carbonate impurities, 250-400 m thick; forms part of the Nimba Ilmenite of Berge (1968). At Mt. Bekeh and the northwestern ranges, mostly magnetite ilmenite with silicate impurities, also part of the Nimba Ilmenite as extended by Berge (1973).

i₂ Iron-formation--In the Nimba Range and Mts. Tohadeh and Yuliohn, mostly carbonate and silicate-bearing magnetite-hematite ilmenite, part of the Nimba Ilmenite of Berge (1968).

i₃ Iron-formation, silicate facies--Orthopyroxene-garnet-quartz rock with minor associated ilmenite and garnet quartzite in the Cocopa area; cumingtonite-garnet-quartz rock with minor associated ilmenite and mica schist in the Kahple area, both less than 400 m thick.

i₄ Iron-formation, oxide facies (ilmenite)--Magnetite-hematite ilmenite.

q Quartzite--Mostly massive garnetiferous quartzite associated with iron-formation in the southeast part of quadrangle.

s Schist--Unit includes quartz-mica schist and amphibole schist with minor quartzite and iron-formation in the Nimba Range.

so Amphibolitic schist--In the Nimba Range, banded or porphyroblastic schists with actinolite, tremolite, hornblende, and anthophyllite, about 700 m thick; referred to as the Seka Valley Amphibole Schist by Berge (1968). At Mt. Yidoiye, actinolite schist.

sg Graphitic schist--Thin bands of dark, sooty, fine-grained graphitic schist containing minor rutile, tourmaline, and diamond near Chapa.

sm₁ Mica schist--Mica phyllite and schist about 250 m thick; graphitic in the Seka Valley. Referred to as the Obahm Ridge Formation of the Nimba Supergroup by Berge (1974).

sm₂ Mica schist--Quartz-mica phyllite 50-100 m thick, referred to as the Mt. Alpha Formation of the Nimba Supergroup by Berge (1974).

g₁ Melanocratic gneiss--Dark, slightly foliated pyroxene-hornblende-plagioclase gneiss and amphibolite.

g₂ Leucocratic gneiss--Undifferentiated, typically well foliated medium-grained biotite-gneiss, includes numerous bodies of melanocratic gneiss not mappable at this scale.

g₃ Granitic gneiss--Mostly coarse grained or porphyroblastic, relatively massive, potassic biotite gneiss with migmatitic segregations and (or) inclusions.

EXPLANATION

MAP SYMBOLS

Field data are shown by conventional symbols; other data sources are indicated by letter symbols adjacent to structure symbols, or at least of line segment to which the symbol applies.

W, aeromagnetic data; P, photo interpretation; R, radiometric data.

--- Contact

--- Fault--upthrown side; S, downthrown side

--- Thrust fault--arrows on upper plate

--- Fault zone or shear zone

--- Fault truncated by dike

--- Antiform--showing trace of axial plane and direction of plunge

--- Synform--showing trace of trough plane and direction of plunge

--- Overturn synform

--- Strike and dip of axial plane of fold

--- Inclined

--- Vertical

--- Strike and dip of beds

--- Inclined

--- Horizontal

--- Vertical

--- Strike and dip of foliation--open symbol indicates foliation transverse, earlier foliation or bedding; solid symbol indicates relation to bedding unknown

--- Inclined

--- Horizontal

--- Vertical

--- Strike and dip of parallel foliation and bedding

--- Inclined

--- Horizontal

--- Vertical

--- Strike of foliation, no dip determined

--- Strike and dip of plane

--- Inclined

--- Horizontal

--- Vertical

--- Strike and dip of planar features determined from photo interpretation (P) or aeromagnetic data (W)--one, two, or three ticks indicate gentle, medium, or steep dip

--- Bearing and plunge of lineation--barbed arrow indicates strike axis or intersecting foliations; solid arrow indicates general lineation

--- Structural trend based on photo interpretation

--- Structural trend based on magnetic

• Observed outcrop

--- Marker bed distinguished by rock symbol or index mineral

Index minerals:

ad andalusite	an anthophyllite	an augite	ep epidote	en enstatite	ep epidote	en enstatite	ky kyanite
gr garnet	gr garnet	gr garnet	py pyrite	px pyroxene	px pyroxene	px pyroxene	px pyroxene
cl chlorite	co cumingtonite	gr garnet	sp staurolite	h hornblende	h hornblende	h hornblende	h hornblende
gr garnet	gr garnet	gr garnet	sp staurolite	hy hypersthene	hy hypersthene	hy hypersthene	st staurolite
d diopside	il ilmenite	il ilmenite	ta tremolite	act actinolite	act actinolite	act actinolite	act actinolite

Fossil locality

--- Invertebrate

--- Plant

--- Radiometric age in m. y.

--- Boundary between nationalities--determined and provisionally

--- Nationality

--- Senegal, 1900-1900 m. y.;
Liberia, 1900-1900 m. y.

--- Sand, gravel, clay, or placer pit--B, barite; S, diamond; G, gold

--- Mine or quarry--B, barite; S, stone or rock metal; G, clay; I, iron

--- Prospect pit--B, barite; K, kyanite

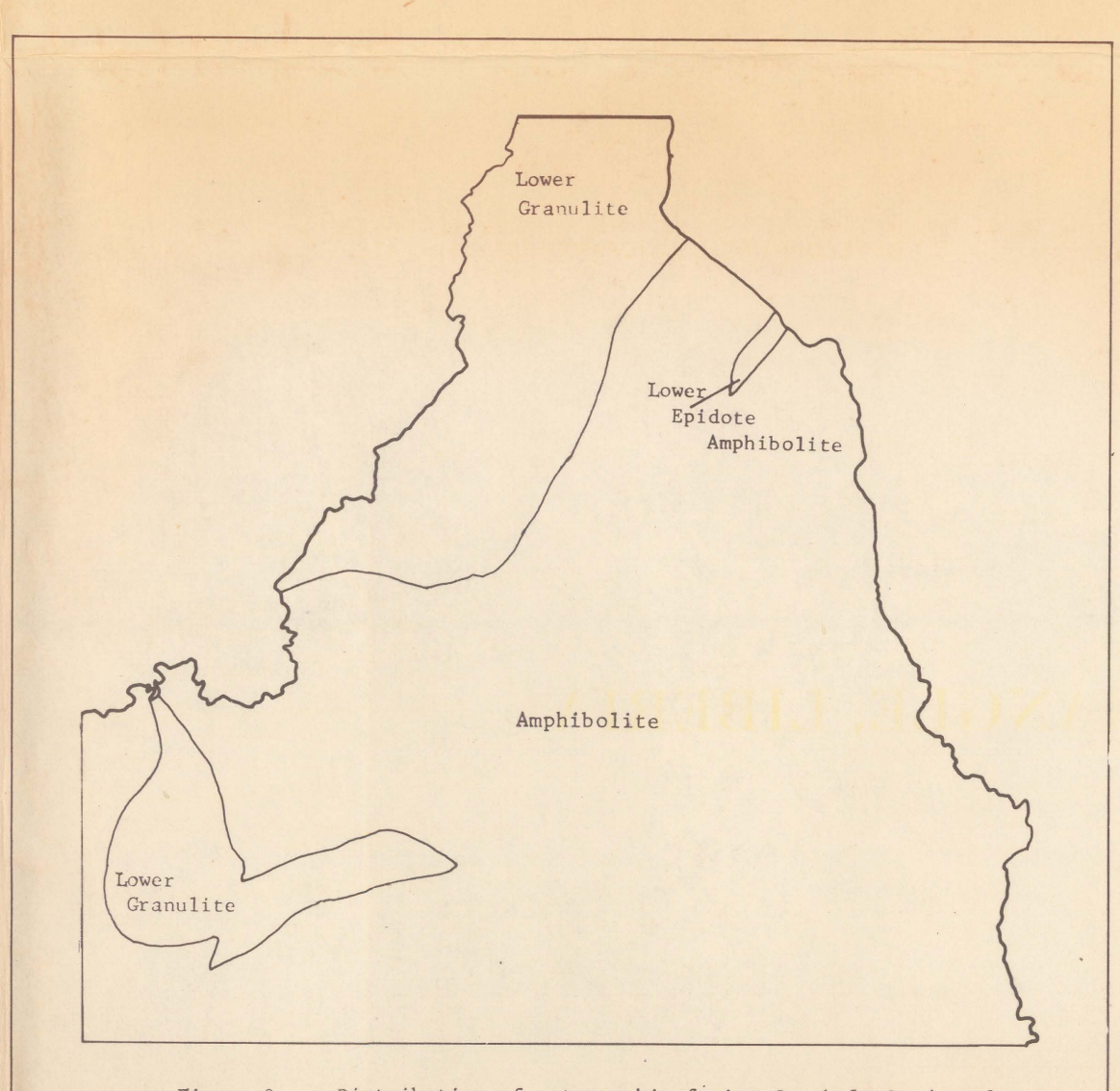


Figure 2-- Distribution of metamorphic facies, Sanokole Quadrangle

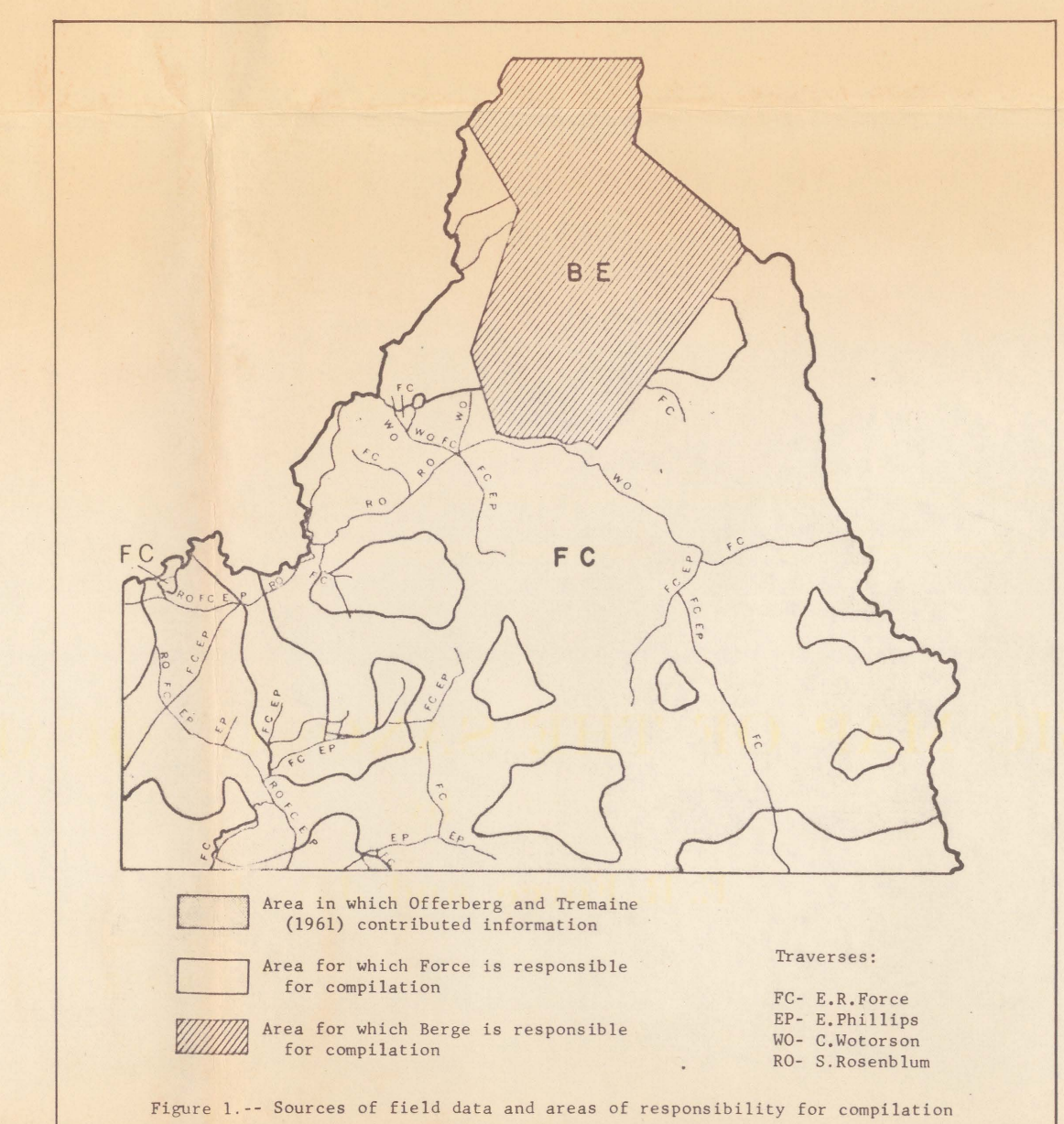


Figure 1-- Sources of field data and areas of responsibility for compilation